

REMARKS

In the final Office Action, the Examiner required cancellation of the non-elected claims, required correction of the drawings, rejected claims 16 – 26, 29 and 30 as anticipated by Hsu et al., rejected claims 27 and 28 as obvious over Hsu et al. in view of Ludikhuiize.

Claim Cancellation

The non-elected claims have been canceled.

Drawing Correction

Formal drawing Figures 1 and 4A-4D are submitted as required by the Examiner.

35 USC §102

The Hsu et al. reference fails to disclose an edge structure of a semiconductor component. Hsu discloses a counter doped island or stripe between the source and drain of a MOSFET device. There is no suggestion or disclosure that the island structures of Hsu are at an edge region of the component.

Applicant respectfully disagrees with the Examiner's assertion that the Hsu reference is an edge structure of an edge region. This goes beyond the teachings of the reference since only islands or a stripe are mentioned..

The claims are directed to a component or a substrate having such an edge structure, and so the claims are not anticipated by this reference.

35 USC §103

The cited reference of Ludikhuiize fails to provide the missing features to Hsu and so does not obviate the claimed invention.

Conclusion

Each issue raised in the action has been addressed. Early favorable reconsideration and allowance is hereby requested.

Respectfully submitted,



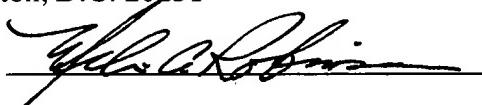
Melvin A. Robinson (Reg. No. 31,870)
Schiff Hardin & Waite
Patent Department
6600 Sears Tower
Chicago, Illinois 60606
Telephone: 312-258-5785
ATTORNEY FOR APPLICANT

CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as First Class Mail in an envelope addressed to:

The Assistant Commissioner for Patents
Washington, D.C. 20231

on October 29, 2002.



VERSION MARKED TO SHOW CHANGES

The claims have been amended as follows:

16.(Amended) A high voltage [resistant edge structure in an edge region of a] semiconductor component, [said edge structure] comprising:
a semiconductor body having a high voltage region with the high voltage semiconductor component and having an edge region of said high voltage region, a high voltage resistant structure at said edge region having at least one inner zone of a first conductivity type adjacent to a first surface of said semiconductor body;
at least one floating guard ring of a second conductivity type arranged in said inner zone, said at least one floating guard ring surrounding the high voltage region; and
inter-ring zones of said first conductivity type respectively arranged in said inner zone, said inter-ring zones being allocated in pairs to each of said floating guard rings, said inter-ring zones being arranged laterally such that they separate two respective consecutive floating guard rings from one another,
wherein at least one of said floating guard rings and said inter-ring zones have at least one of conductivities and geometries set such that their free charge carriers are totally depleted when a blocking voltage is applied.

20.(Amended) The high voltage semiconductor component [resistant edge structure] as claimed in claim 16, wherein said floating guard rings have one of a U-shaped or V-shaped cross-section.

21.(Amended) The high voltage semiconductor component [resistant edge structure] as claimed in claim 16, further comprising:

at least one space charge zone stopper located at an outermost edge of said edge region of said semiconductor component.

22.(Amended) The high voltage semiconductor component [resistant edge structure] as claimed in claim 21, wherein said space charge zone stopper comprises a heavily doped region of said first conductivity type, said heavily doped region being arranged in said inner zone.

23.(Amended) The high voltage semiconductor component [resistant edge structure] as claimed in claim 21, wherein said space charge zone stopper comprises a damage implanted region being arranged in said inner zone.

24.(Amended) The high voltage semiconductor component [resistant edge structure edge] as claimed in claim 21, wherein said space charge zone stopper comprises an electrode connected to said inner zone, said electrode being one of metallic or containing polysilicon.

25.(Amended) The high voltage semiconductor component [resistant edge structure] as claimed in claim 16, further comprising:
at least one magnetoresistor located at an inner edge of said edge region of said semiconductor component.

26.(Amended) The high voltage semiconductor component [resistant edge structure] as claimed in claim 25, wherein at least one of said magnetoresistors is simultaneously a gate electrode of said semiconductor component.

27.(Amended) The high voltage semiconductor component [resistant edge structure] as claimed in claim 25, wherein at least an outermost of said magnetoresistors is nearly completely enclosed by a cathode metallization in a direction of said first surface of said semiconductor component.

28.(Amended) The high voltage semiconductor component [resistant edge structure] as claimed in claim 27, wherein said cathode metallization is a metallization of a source electrode of said semiconductor component.

29.(Amended) The high voltage semiconductor component [resistant edge structure] as claimed in claim 16, wherein said inter-ring zones in said edge region have a cross-section tapered to said first surface.

30.(Amended) The high voltage semiconductor component [resistant edge structure] as claimed in claim 16, wherein said semiconductor component is one of a vertical power transistor or an IGBT.